## PATENT COOPERATION TREATY

# **PCT**

# TRANSLATION INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

		gent's file referen 11113P	nce	FOR FURTHER A	CTION	See Form PCT/IPEA/416
Internati	ional ap	plication No.		International filing da	te (day/month/year)	Priority date (day/month/year)
PCT	/JP2	2004/016	940	15.11.200	4	19.11.2003
Internati	ional Pa	tent Classificatio	n (IPC) or nati	onal classification and	IPC	
C08	J3/1	L2, 9/32	, C09K3	3/00		
Applicate <b>MAT</b>		OTO YUSH	I-SEIY	AKU CO., LI	rd.	
1.				ninary examination rep e applicant according t		nternational Preliminary Examining Authority
2.	This R	EPORT consists	of a total of	7	sheets, including	this cover sheet.
3.	This re	eport is also acco	mpanied by A	NNEXES, comprising:		
	a. 🔀	(sent to the	applicant and	to the International Bu	reau) a total of 8	sheets, as follows:
		sheets	of the descrip	tion, claims and/or dra	wings which have been a	mended and are the basis for this report and/or le 70.16 and Section 607 of the Administrative
						siders contain an amendment that goes beyond in item 4 of Box No. I and the Supplemental
	ь. Г	7	International	Rureau only) a total of	(indicate type and number	r of electronic carrier(s))
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	related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).					
4.	This re	eport contains in	dications relati	ng to the following iter	ns:	
	$\boxtimes$	Box No. I	Basis of the	report		
	Ш	Box No. II	Priority			
		Box No. III	Non-establi:	shment of opinion with	regard to novelty, inventi	ive step and industrial applicability
		Box No. IV	Lack of unit	y of invention		
	$\boxtimes$	Box No. V		atement under Article d explanations supporti		ty, inventive step or industrial applicability;
	$\boxtimes$	Box No. VI	Certain doc	uments cited		
		Box No. VII	Certain defe	ects in the international	application	
		Box No. VIII	Certain obse	ervations on the interna	itional application	
Date of	submiss	ion of the deman	nd		Date of completion of thi	s report
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Name ar	nd maili	ng address of the	: IPEA/JP		Authorized officer	
Facsimil	le No				Telephone No	

International application No.
PCT/JP2004/016940

Box	x No. I	Basis of the report		
1.		ard to the language, this report is based on the internation	onal application in the language in	which it was filed, unless otherwise
		is report is based on translations from the original langu- ich is the language of a translation furnished for the pur		,
		international search (Rule 12.3 and 23.1(b))		
		publication of the international application (Rule 12.	4)	
		international preliminary examination (Rule 55.2 and	//or 55.3)	
2.		ard to the <b>elements</b> of the international application, this Office in response to an invitation under Article 14 a rt):		
	$\square$	international application as originally filed/furnished		
	the	description:		
	pag	ges <u>2-4,7-11,14-16,18-22,24-52</u>		as originally filed/furnished
	pag	ges* 1,5,6,12,13,17,23	received by this Authority on	10.05.2005
	pag	ges*	received by this Authority on	
	the	claims:		
	nos	2–34		as originally filed/furnished
	nos	s.*k	as amended (togethe	er with any statement) under Article 19
	nos	3.* 1	_ received by this Authority on	10.05.2005
	nos	3.*	received by this Authority on	
	the	drawings:		
	she	eets 1/1		as originally filed/furnished
	she	eets*	received by this Authority on	
	she	eets*	received by this Authority on	
	☐ a se	equence listing and/or any related table(s) – see Supplen	nental Box Relating to Sequence I	isting.
3.		e amendments have resulted in the cancellation of:	5 1	
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		the description, pages		
	E	the claims, nos.		
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4.	□ Thi	any table(s) related to sequence listing (specify): is report has been established as if (some of) the amen	dments annexed to this report and	
4.		y have been considered to go beyond the disclosure as f		
	<u> </u>	the description, pages		
	<u> </u>	the claims, nos.		
		the drawings, sheets/figs		
		the sequence listing (specify):		
		any table(s) related to sequence listing (specify):		
*	If item 4	applies, some or all of those sheets may be marked "sup	perseded."	

PCT/JP2004/016940

Box				ticle 35(2) with regard to novelty, inventive step or industrial applicability; porting such statement	
1.	Statement				
	Novelty (N	<i>I</i> )	Claims	1-34	YES
			Claims		NO
	Inventive s	step (IS)	Claims	1-34	YES
			Claims		NO
	Industrial a	applicability (IA)	Claims	1-34	YES
			Claims		NO

#### 2. Citations and explanations (Rule 70.7)

Document 1: JP 2001-151895 A (Matsumoto Yushi Seiyaku Co., Ltd.), 05 June 2001

Document 2: EP 1288727 A1 (Kureha Kagaku Kogyo Kabushiki Kaisha), 05 March 2003

Document 3: JP 11-269343 A (Inoac Corp.), 05 October 1999

#### Claims 1 to 10

The invention set forth in claims 1 to 10 involves an inventive step in relation to document 1 cited in the international search report.

Document 1 does not disclose the feature wherein a gaseous fluid that contains thermally expandable microspheres is sprayed from a dispersion nozzle so that the thermally expandable microspheres are dispersed in a stream of hot air, which causes the dispersed thermally expandable microspheres to expand by heating said thermally expandable microspheres to a temperature higher than the expansion initiation temperature thereof. On the other hand, the invention set forth in the abovementioned claims of the present application exhibits an advantageous effect in that it is possible to produce thermally expanded microparticles that exhibit little change in the variation coefficient of the particle size

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

distribution during expansion and have an extremely low content of agglomerated particles or unexpanded thermally expandable microspheres as a result of the feature in question.

#### Claims 11 to 20

The invention set forth in claims 11 to 20 involves an inventive step in relation to document 1 cited in the international search report.

Document 1 does not disclose the feature wherein the thermally expanded microspheres comprise 5% or less by weight of agglomerated particles and 5% or less by weight of microspheres that have a true specific gravity of 0.79 g/cc or higher at a temperature of 25°C. On the other hand, the invention set forth in the abovementioned claims of the present application exhibits an advantageous effect in that the thermally expanded microspheres exhibit little change in the variation coefficient of the particle size distribution during expansion and have an extremely low content of agglomerated particles or unexpanded thermally expandable microspheres and as a result of the feature in question.

#### Claims 21 to 29

The invention set forth in claims 21 to 29 involves an inventive step in relation to document 1 cited in the international search report.

Document 1 does not disclose the feature wherein the thermally expandable microspheres exhibit an expansion factor of over 100% at the maximum expansion temperature, comprise 5% by weight or less of agglomerated microspheres, and comprise 5% by weight or

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

less of microspheres and have a true specific gravity of 0.79 g/cc or higher at a temperature of 25°C. On the other hand, the invention set forth in the abovementioned claims of the present application exhibits an advantageous effect in that it is difficult to destroy the thermally expandable microspheres by means of an external force as a result of the feature in question.

#### Claims 30 and 31

The inventions set forth in claims 30 and 31 involve an inventive step in relation to document 1 cited in the international search report.

Document 1 does not disclose hollow compositions or hollow molded articles that contain the abovementioned thermally expanded microspheres and/or the abovementioned thermally expandable microspheres. On the other hand, the inventions set forth in the abovementioned claims of the present application exhibit an advantageous effect in that the inventions do not undergo cure shrinkage during the molding process or thermosettling over time as a result of the feature in question.

#### Claims 32 to 34

The inventions set forth in claims 32 to 34 involve an inventive step in relation to document 1 cited in the international search report.

Document 1 does not disclose the feature wherein the thermally expandable microspheres are configured from an outer shell, which comprises a thermoplastic resin obtained by polymerizing a monomer mixture that contains 20 to 80% by weight of a nitrile-based monomer and 80 to 20% by weight of a carboxyl group-containing monomer as

International application No.
PCT/JP2004/016940

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

essential constituents, and a blowing agent, which comprises a fluorinated compound with a carbon number of 2 to 10 that has an ether structure and does not include chlorine atoms or bromine atoms. On the other hand, the invention set forth in the abovementioned claims of the present application exhibits an advantageous effect in that the abovementioned thermally expandable microspheres are capable of serving as the starting material for the abovementioned thermally expanded microspheres and the abovementioned thermally expandable microspheres as a result of the feature in question.

International application No.
PCT/JP2004/016940

Box	No. VI Certain documents cited			
1.	Certain published documents (Rule 70.10)			
	Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
	WO 2004/74396 A1	02.09.2004	23.02.2004	24.02.2003
	[E,A]			
2.	Non-written disclosures (Rule 70.9)			
2.		Data of non waitten d		e of written disclosure
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